

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)

2. (Currently Amended) An image processing apparatus for smoothing image data that is formed by a plurality of pixels and includes at least ~~one~~ three color ~~component~~ components, each of the plurality of pixels having a single color component, comprising:

similarity degree calculating means for calculating similarity degrees indicating similarity between a target pixel and pixels in ~~at the~~ vicinity of the target pixel among ~~at the~~ plurality of pixels that form the image data;

classifying means for classifying pixels whose similarity degrees have been calculated by the similarity degree calculating means into one of ~~a plurality of~~ nine or more groups having different similarity ~~degree~~ features; and

smoothing means for selecting a pixel to be subjected to smoothing from among a pixel that has been classified into a particular ~~one of group in the~~ plurality of nine or more groups and pixels in ~~at the~~ vicinity of the pixel that has been classified into the particular group, and for performing smoothing on color information of at least one color component of the selected pixel by using pieces of color information of at least one color component of the selected pixel and of pixels adjacent to the selected pixel.

3. (Withdrawn) The image processing apparatus according to claim 2, wherein said smoothing means smoothes color information of a color component of a pixel adjacent to a pixel that has been classified into the particular group by the classifying means, and restores into its original state color information of a color component of a smoothed pixel among pixels adjacent to a pixel that has not been classified into the particular group by the classifying means.

4. (Withdrawn) The image processing apparatus according to claim 3, wherein said smoothing means:

sequentially selects pixels that became subjects of classification by the classifying means;

smoothes color information of a color component of a pixel that is adjacent to not only a pixel selected at an arbitrary time point but also to a pixel that is not selected at the arbitrary time point when the selected pixel is classified into the particular group; and

restores into its original state color information of a color component of a smoothed pixel among pixels adjacent to the pixel selected at the arbitrary time point when the selected pixel is not classified into the particular group.

5. (Previously Presented) The image processing apparatus according to claim 2, wherein said smoothing means smoothes color information of a color component of a pixel that is adjacent to a plurality of pixels that have been classified into the particular group by the classifying means.

6. (Currently Amended) The image processing apparatus according to claim 2, wherein:

_____ said smoothing means uses, as said particular group, a group having a feature that similarity degrees calculated in at least two sets of two different directions by the similarity degree calculating means are approximately the same, and

the two different directions are substantially orthogonal to each other.

7. (Currently Amended) The image processing apparatus according to claim 6, wherein said smoothing means judges that any two calculated sets of similarity degrees ~~in at least two different directions~~ are approximately the same when a difference between the two calculated sets of similarity degrees ~~calculated in the at least two different directions by the similarity degree calculating means~~ is smaller than a prescribed threshold value.

8. (Currently Amended) An image processing apparatus for smoothing image data that is formed by a plurality of pixels and includes at least ~~one~~ three color-component components, each of the plurality of pixels having a single color component, comprising:

interpolating means for interpolating pieces of color information of a color component that is absent from pixels that are arranged at a prescribed pitch among the plurality of pixels that form the image data;

similarity degree calculating means for calculating similarity degrees in at least four different directions for each pixel to be a subject of interpolation by the interpolating means;

classifying means for classifying each of pixels whose similarity degrees have been calculated by the similarity degree calculating means into one of ~~a plurality of~~ nine or more groups having different similarity ~~degree~~-features; and

smoothing means for selecting a pixel to be subjected to smoothing from among a pixel that has been classified into a particular ~~one of group in the~~ plurality of nine or more groups and pixels in ~~at the~~ vicinity of the pixel that has been classified into the particular group, and for performing smoothing on color information of a color component of the selected pixel by using pieces of color information of color components of the selected pixel and of pixels adjacent to the selected pixel.

9. (Previously Presented) The image processing apparatus according to claim 8, wherein: said smoothing means performs the smoothing parallel with the interpolation by the interpolating means.

10. (Previously Presented) The image processing apparatus according to claim 8, wherein:

said interpolating means employs, as subjects of the interpolation, pixels that miss a color component having a highest spatial arrangement density; and

said smoothing means smoothes color information of the color component having the highest spatial arrangement density of a pixel adjacent to a pixel that has been classified into the particular group.

11. (Withdrawn) The image processing apparatus according to claim 8, wherein said smoothing means smoothes color information of a color component of a pixel adjacent to a pixel that has been classified into the particular group by the classifying means, and restores into its original state color information of a color component of a smoothed pixel among pixels adjacent to a pixel that has not been classified into the particular group by the classifying means.

12. (Withdrawn) The image processing apparatus according to claim 11, wherein said smoothing means:

sequentially selects pixels that became subjects of classification by the classifying means;

smoothes color information of a color component of a pixel that is adjacent to not only a pixel selected at an arbitrary time point but also to a pixel that is not selected at the arbitrary time point when the selected pixel is classified into the particular group; and

restores into its original state color information of a color component of a smoothed pixel among pixels adjacent to the pixel selected at the arbitrary time point when the selected pixel is not classified into the particular group.

13. (Previously Presented) The image processing apparatus according to claim 8, wherein said smoothing means smoothes color information of a color component of a pixel that is adjacent to a plurality of pixels that have been classified into the particular group by the classifying means.

14. (Currently Amended) The image processing apparatus according to claim 8, wherein:

_____ said smoothing means uses, as said particular group, a group having a feature that at least two sets of similarity degrees calculated for two of the four different directions are approximately the same, and

_____ the two different directions ~~being~~ are substantially orthogonal to each other.

15. (Previously Presented) The image processing apparatus according to claim 14, wherein said smoothing means judges that any two calculated sets of similarity degrees are approximately the same when a difference between the two calculated sets of similarity degrees is smaller than a prescribed threshold value.

16. (Canceled)

17. (Currently Amended) A storage medium in which an image processing program is stored that causes a computer to smooth image data that is formed by a plurality of pixels and includes at least ~~one three color-component~~ components, each of the plurality of pixels having a single color component, the image processing program causing the computer to execute:

a similarity degree calculating step of calculating similarity degrees indicating similarity between a target pixel and pixels in ~~at~~ the vicinity of the target pixel among ~~at~~ the plurality of pixels that form the image data;

a classifying step of classifying pixels whose similarity degrees have been calculated by the similarity degree calculating step into one of ~~a plurality of~~ nine or more groups having different similarity ~~degree~~ features; and

a smoothing step of selecting a pixel to be subjected to smoothing from among a pixel that has been classified into a particular ~~one of group in the~~ plurality of nine or more groups and pixels in ~~at~~ the vicinity of the pixel that has been classified into the particular group, and for performing smoothing on color information of at least one color component of the

selected pixel by using pieces of color information of at least one color component of the selected pixel and of pixels adjacent to the selected pixel.

18. (Withdrawn) The storage medium storing the image processing program according to claim 17, wherein said smoothing step smoothes color information of a color component of a pixel adjacent to a pixel that has been classified into the particular group by the classifying step, and restores into its original state color information of a color component of a smoothed pixel among pixels adjacent to a pixel that has not been classified into the particular group by the classifying step.

19. (Withdrawn) The storage medium storing the image processing program according to claim 18, wherein said smoothing step:

sequentially selects pixels that became subjects of classification by the classifying step;

smoothes color information of a color component of a pixel that is adjacent to not only a pixel selected at an arbitrary time point but also to a pixel that is not selected at the arbitrary time point when the selected pixel is classified into the particular group; and

restores into its original state color information of a color component of a smoothed pixel among pixels adjacent to the pixel selected at the arbitrary time point when the selected pixel is not classified into the particular group.

20. (Original) The storage medium storing the image processing program according to claim 17, wherein said smoothing step smoothes color information of a color component of a pixel that is adjacent to a plurality of pixels that have been classified into the particular group by the classifying step.

21. (Currently Amended) The storage medium storing the image processing program according to claim 17, wherein:

_____ said smoothing step uses, as said particular group, a group having a feature that similarity degrees calculated in at least two sets of two different directions by the similarity degree calculating step are approximately the same, and
the two different directions are substantially orthogonal to each other.

22. (Currently Amended) The storage medium storing the image processing program according to claim 21, wherein said smoothing step judges that any two sets of similarity degrees ~~in at least two different directions~~ are approximately the same when a difference between the two calculated sets of similarity degrees ~~calculated in the at least two different directions by the similarity degree calculating step~~ is smaller than a prescribed threshold value.

23. (Currently Amended) A storage medium in which an image processing program is stored that causes a computer to smooth image data that is formed by a plurality of pixels and includes at least ~~one three color component~~ components, each of the plurality of pixels having a single color component, the image processing program causing the computer to execute:

interpolating step for interpolating pieces of color information of a color component that is absent from pixels that are arranged at a prescribed pitch among the plurality of pixels that form the image data;

similarity degree calculating step for calculating similarity degrees in at least ~~two~~ four different directions for each pixel to be a subject of interpolation by the interpolating step;

classifying step for classifying each of pixels whose similarity degrees have been calculated by the similarity degree calculating step into one of ~~a plurality of~~ nine or more groups having different similarity ~~degree~~ features; and

smoothing step for selecting a pixel to be subjected to smoothing from among a pixel that has been classified into a particular ~~one of group in the plurality of~~ nine or more groups

and pixels in the vicinity of the pixel that has been classified into the particular group, and for performing smoothing on color information of a color component of the selected pixel by using pieces of color information of color components of the selected pixel and of pixels adjacent to the selected pixel.

24. (Original) The storage medium storing the image processing program according to claim 23, wherein said smoothing step performs the smoothing parallel with the interpolation by the interpolating step.

25. (Original) The storage medium storing the image processing program according to claim 23, wherein:

said interpolating step employs, as subjects of the interpolation, pixels that miss a color component having a highest spatial arrangement density; and

said smoothing step smoothes color information of the color component having the highest spatial arrangement density of a pixel adjacent to a pixel that has been classified into the particular group.

26. (Withdrawn) The storage medium storing the image processing program according to claim 23, wherein said smoothing step smoothes color information of a color component of a pixel adjacent to a pixel that has been classified into the particular group by the classifying step, and restores into its original state color information of a color component of a smoothed pixel among pixels adjacent to a pixel that has not been classified into the particular group by the classifying step.

27. (Withdrawn) The storage medium storing the image processing program according to claim 26, wherein said smoothing step:

sequentially selects pixels that became subjects of classification by the classifying step;

smoothes color information of a color component of a pixel that is adjacent to not only a pixel selected at an arbitrary time point but also to a pixel that is not selected at the arbitrary time point when the selected pixel is classified into the particular group; and

restores into its original state color information of a color component of a smoothed pixel among pixels adjacent to the pixel selected at the arbitrary time point when the selected pixel is not classified into the particular group.

28. (Original) The storage medium storing the image processing program according to claim 23, wherein said smoothing step smoothes color information of a color component of a pixel that is adjacent to a plurality of pixels that have been classified into the particular group by the classifying step.

29. (Currently Amended) The storage medium storing the image processing program according to claim 23, wherein:

_____ said smoothing step uses, as said particular group, a group having a feature that similarity degrees calculated in at least two sets of two different directions by the similarity degree calculating step are approximately the same, and

the two different directions are substantially orthogonal to each other.

30. (Currently Amended) The storage medium storing the image processing program according to claim 29, wherein said smoothing step judges that any two sets of similarity degrees ~~in at least two different directions~~ are approximately the same when a difference between the two calculated sets of similarity degrees ~~calculated in the at least two different directions by the similarity degree calculating step~~ is smaller than a prescribed threshold value.